Business Analysis for IT Projects

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4. Requirements Elicitation

4. Requirements Elicitation

4.1 What is Requirements.

4.2 Requirements Types & Characteristics .

4.3 Requirements Attributes.

4.4 Requirement Elicitation Definition.

4.5 Requirement Elicitation Activities.

4.6 Requirements Elicitation Techniques.

4.7 Elicitation Problems & Guidelines.

4.1 What is a Requirement

- A requirement is some aspect of a system's content or behavior, which is necessary or desired by the customer or client
  - Provides a clear understanding of the problem domain
  - Establishes a context of the need/problem

- Requirements define
  - *What* the system must do
  - *What* characteristics or properties the system must have
  - *What* information is involved
  - *What* degree of quality is expected
  - *What* constraints apply to the solution
  - *Who* will use the system
  - *How* the system is to be used

4.1 What is a Requirement

- It may range from a high-level abstract statement of a service or of a system constraint to a detailed mathematical functional specification
- This is inevitable as requirements may serve a dual function
  - May be the basis for a bid for a contract - therefore must be open to interpretation
  - May be the basis for the contract itself - therefore must be defined in detail.
  - Both these statements may be called requirements.

4.1 What is a Requirement

- Well defined requirements are
  - Needed
  - Correct
  - Complete
  - Concise
  - Unambiguous
  - Discrete
  - Unique
  - Verifiable
  - Traceable
  - Consistent

4.2 Requirement Characteristics

It is important to recognize that needs, wants, and expectations are not requirements until they have been elicited, analyzed, and documented The desired characteristics of a requirement include the following:

- ***Solution free or technology independent***.
- ***Organized***. A hierarchical structure is preferred. The structure should ensure that the requirements are complete, readily locatable, sorted by type, and integrated without conflicting with each other.
- ***Clear***. Short, simple, unambiguous requirement statements are preferable; however, any qualifications regarding the requirements should be noted.
- ***Prioritized***. The value of each stakeholder requirement may be ranked.
- ***Traceable***. Each requirement should be specific to a stakeholder or other origin. This facilitates the change management process

4.2 Requirement Types

- **Functional requirements**

Describe the interactions between the system and its environment independently from the implementation

- **Nonfunctional requirements**

Aspects not directly related to functional behavior
“The response time must be less than 1 second”

- **Assumptions & Constraints**
- **Business Rules**

4.2 Requirement Types

Assumptions & Constraints

Assumption

Factors that are considered to be true and that haven't been proven so. Can affect scope and requirements.

Constraint

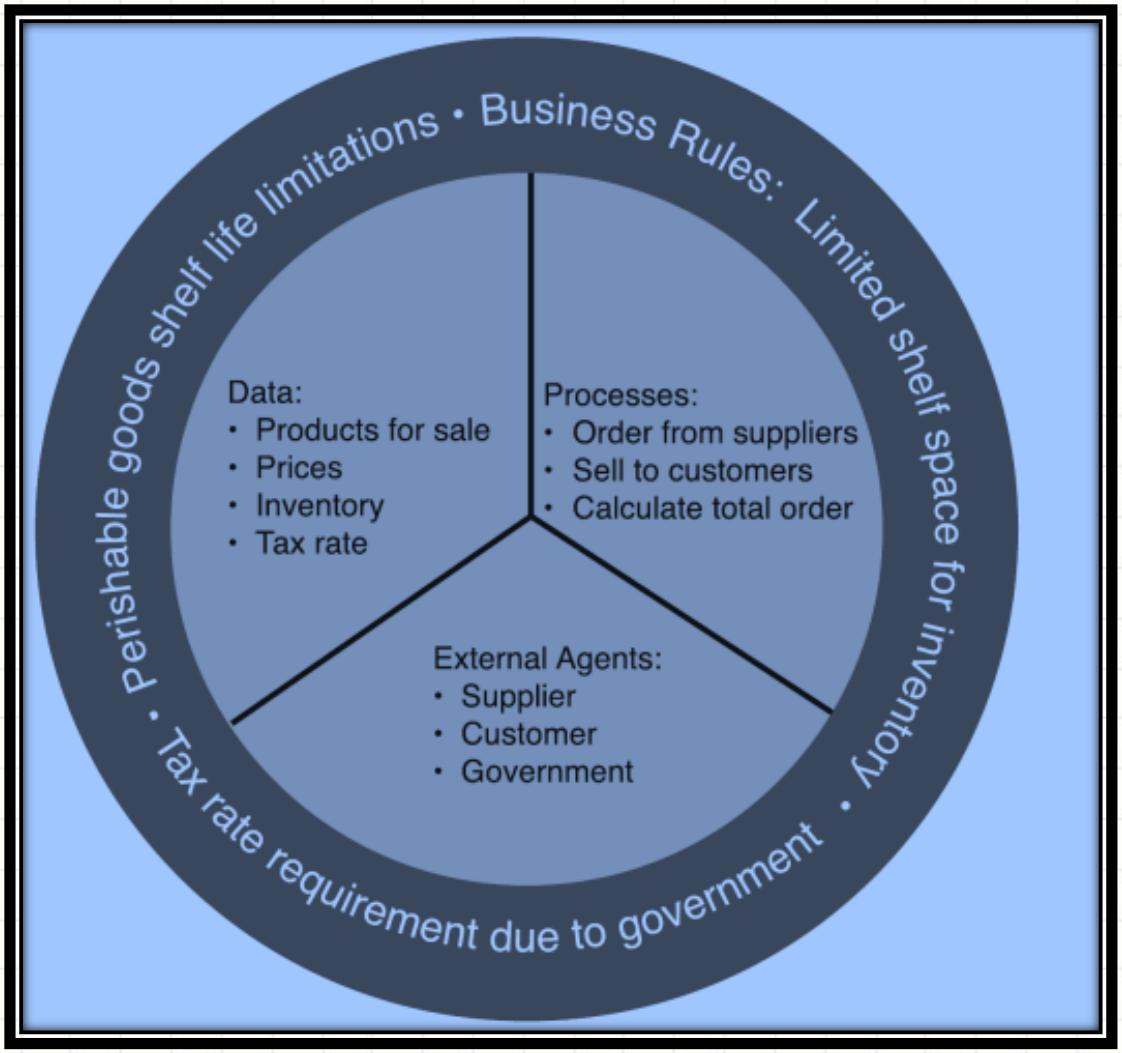
An imposition on a project that limits choices a project team can make. Typical categories include business, technical, and external.

4.2 Requirement Types

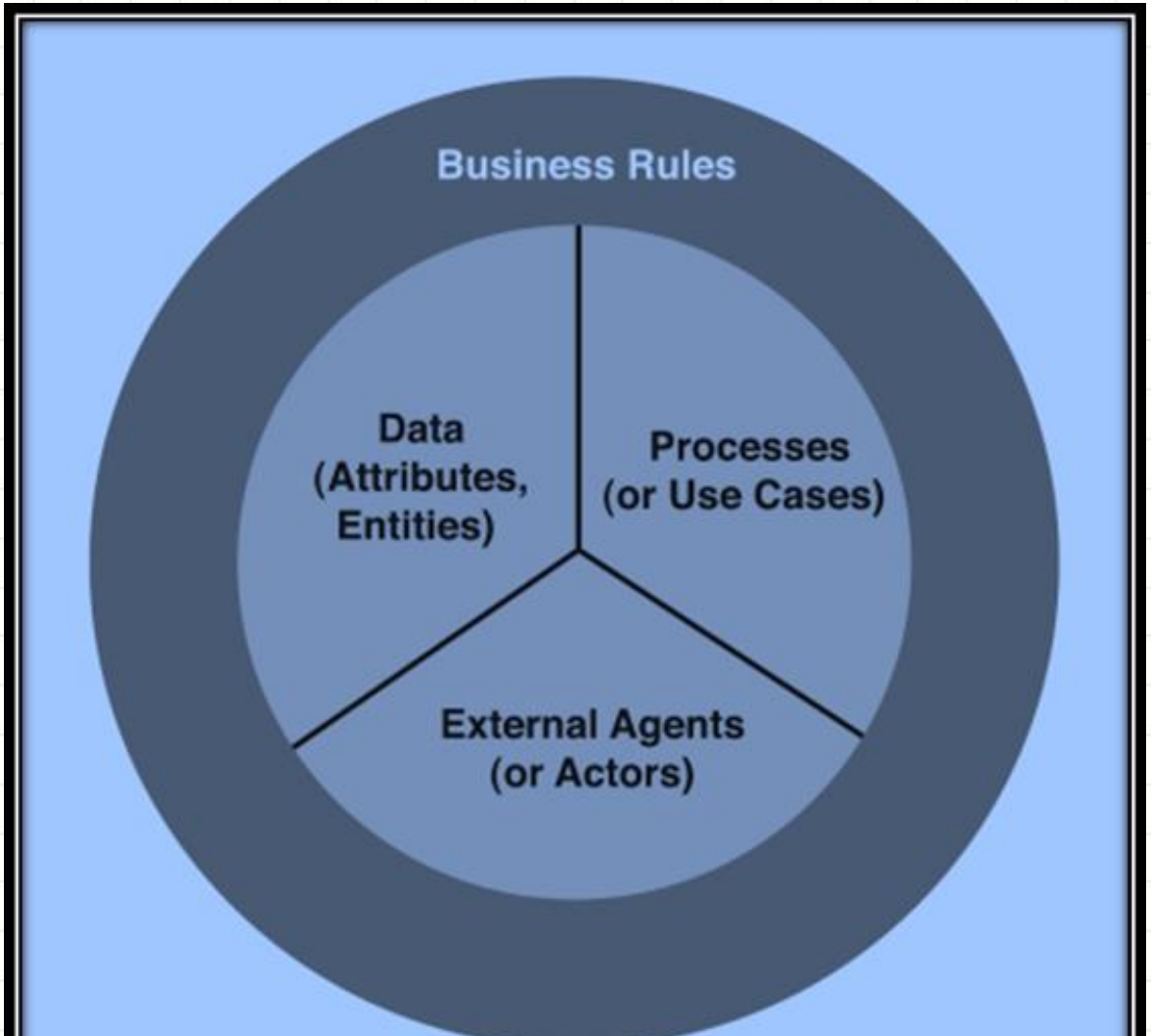
Assumptions & Constraints

.1 Assumptions	• Assumptions are beliefs about things that have not been proven or verified. • Need to be documented (theme).
.2 Business Constraints	Imposed by the business for various reasons • Budgets • Time • Skill levels • Need to not disrupt stakeholders
.3 Technical Constraints	Architecture limitations, languages, databases, hardware, enterprise architecture standards, etc. May even include things that sound like design: • Resource utilization or thresholds • Message size and timing • Software size • File numbers and sizes • Records and data elements.

4.2 Requirement Types



4.2 Requirement Types



4.3 Requirements Attributes

Complexity	• A judgment of how hard a requirement will be to implement.
Absolute Reference	• Unique identifier for the requirement. • Not to be altered or re-used if the requirement is moved, changed or deleted.
Risks	• Risk associated with meeting or not meeting the requirement.
Author	• Who documented the requirement. • If the requirement is later found to be ambiguous the author may be consulted for clarification.
Source	• Of who provided the requirement. • Every requirement needs a source with authority to specify and approve requirements.

4.3 Requirements Attributes

Status	• Current status of the requirement. • Indicates things such as whether it is proposed, accepted, verified with the users, or implemented.
Ownership	• Individual or group needing the requirement or will be the business owner after the product is released.
Urgency	• Specifies when the requirement is needed. • Only specify separately from "Priority" when an implementation deadline exists.
Priority	• Which requirements to implement first based on importance to the stakeholders.
Stability	• Indicates how mature the requirement is. • Used to determine if a requirement is firm enough to start work on.

Why Define Requirements

- Poor-defined requirements and unmanaged requirement changes lead to
  - Disagreement with customers on requirements and product acceptance
  - Unrealistic estimates and commitments to customers
  - Schedule slippage
  - Cost overruns
  - Uncertainty regarding project closure
  - Team burnout
  - Unhappy customers

- It is critical to involve the customers and stakeholders early in the requirements definition process

4.4 Requirements Elicitation Definitions

Requirement elicitation is just the process of extracting the information from users, customers, and group of people.

It is non-trivial as we can never find the requirement of the system from the user and customer by just asking them what the system actually needs (because customers doesn't know what they really need).

Possible ways to get the requirements are making questionnaires, brain storming, work-shopping and interviewing.

4.4 Requirements Elicitation Definition

Requirements elicitation is all about learning and understanding the needs of users and project sponsors with the ultimate aim of communicating these needs to the system developers.

The requirements elicitation process involves a set of activities that must allow for communication, prioritization, negotiation, and collaboration with all the relevant stakeholders.

4.4 Requirements Elicitation Definition

Is the practice of collecting the requirements of a system from users, customers and other stakeholders. The practice is also sometimes referred to as requirements gathering.

Requirements Elicitation focuses on understanding what is really needed to allow the business objectives to be met by the sponsor of customer.

Requirements Elicitation is formally a process of drawing out responses from various stakeholders at the client organization about the project requirements.

4.5 Requirements Elicitation Activities

4.5.1 Understand the Application Domain

4.5.2 Start with Problem Statement

4.5.3 Identify the Sources of Requirements

4.5.4 Analyze the stakeholders

4.5.5 Select the techniques, approaches, and tools to use in Elicitation

4.5.6 Prepare , Conduct , Document , Confirm Requirements (PCDC)

4.5.1 Understand the application domain

It is important when beginning the process of requirements elicitation to investigate and examine in detail the situation or "real world" in which the system will ultimately reside.

The current environment needs to be thoroughly explore including the political, organizational, and social aspects related to the system, in addition to any constraints they may enforce upon the system and its development.

Existing work processes and the related problems to be solved by the system need to be described with respect to the key business goals and issues.

4.5.2 Start with Problem Statement

- The problem statement is developed by the client as a condensed description of the requirements that should be addressed by the system.
- Describes the problem that should be solved.
- It describes “what” is needed, not “how” it should be reached.

4.5.2 Start with Problem Statement

- Current situation: The problem to be solved
  - A few pages
- Description of one or more scenarios
- Some initial requirements
  - Functional and Non-functional requirements
  - No complete description
- Project Schedule
  - Major milestones that involve interaction with the client including deadline for delivery of the system
- Target environment
  - The environment in which the delivered system has to perform a specified set of system tests

Example

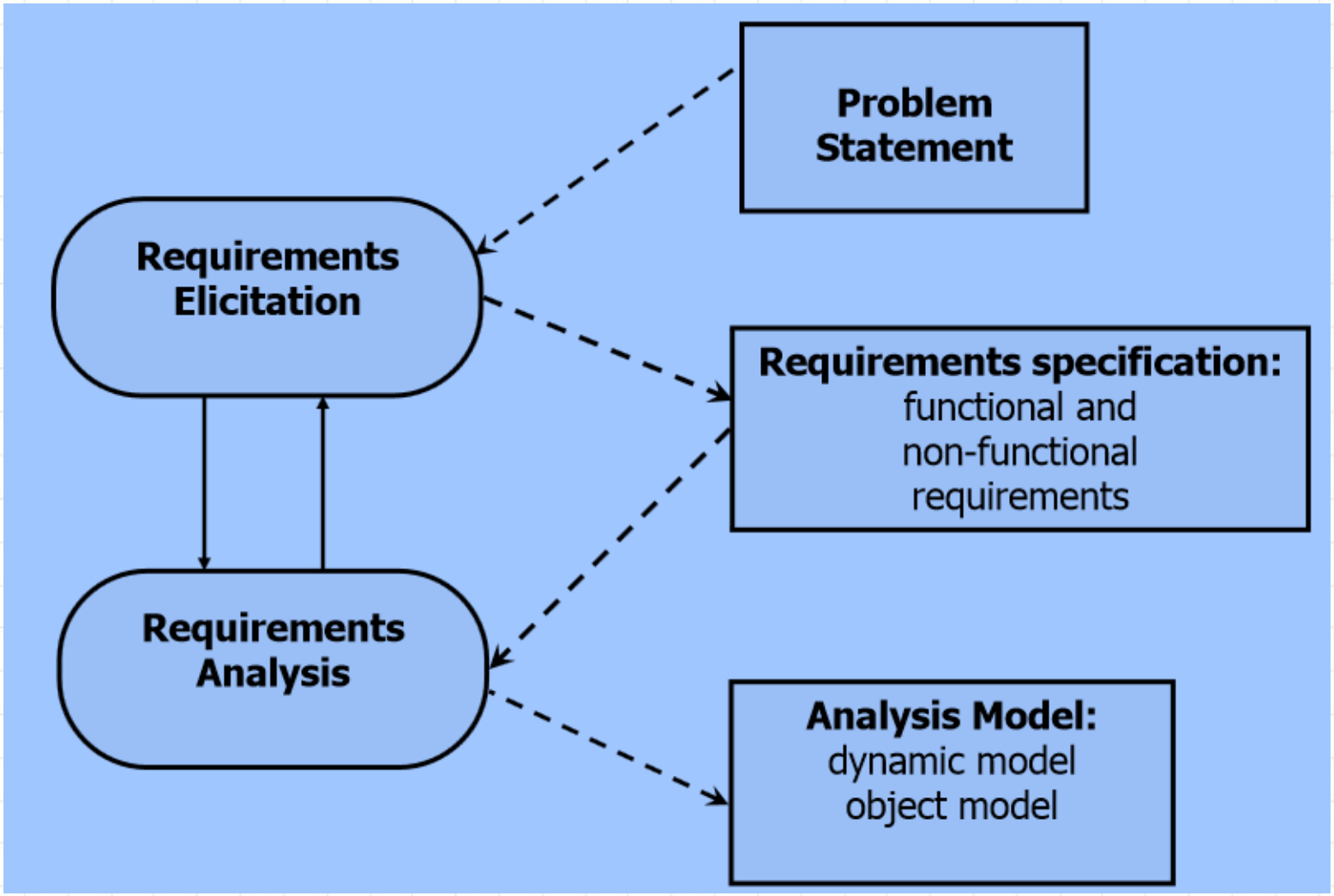
Idea: A Library Management System should be designed. Information on books, CDs, DVDs, Journals, etc. can be stored and retrieved

Problem Statement

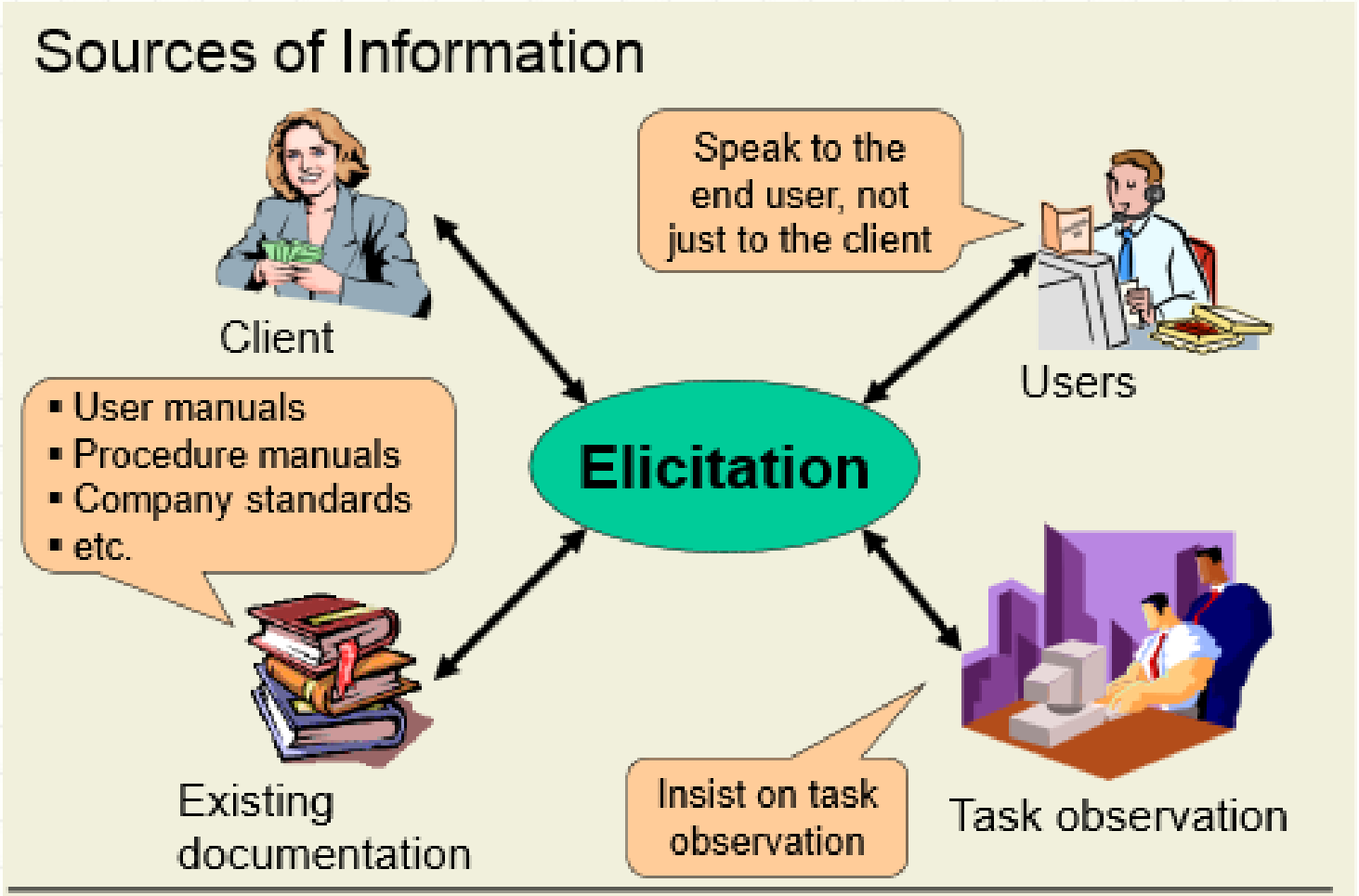
Possible Requirements:

- Searching by Title, Author, and/or ISDN should be possible — functional requirement
- User Interface should be web-based (accessible via WWW Browser) — Implementation requirement
- At least 20 transactions per seconds should be possible — performance requirement
- All services should be available within 10 minutes — availability requirement
- Users have no access to personal data of other users — Security requirement

Requirements Elicitation Process



4.5.3 Sources of Requirements



4.5.3 Sources of Requirements

1. Stakeholders
2. Business Processes
3. Organizational Policies and Procedures
4. Existing Automated Systems

4.5.3 Sources of Requirements

1- Stakeholders

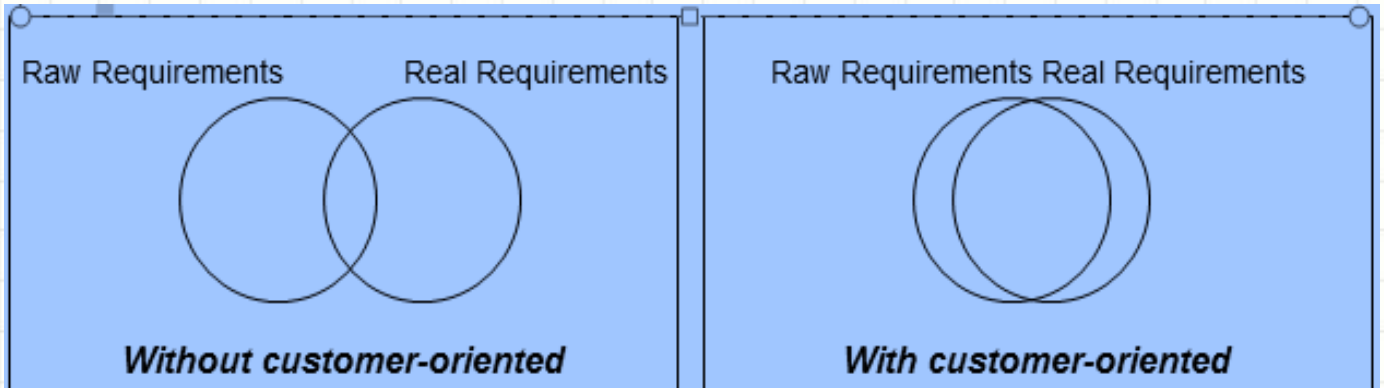
- Stakeholders include anyone with an interest in the system, for example
  - Sponsors
  - Customers
  - System Users/Domain Experts
  - Project Team

- Identify stakeholders by asking questions
  - Who will use the product?
  - Who will provide the inputs?
  - Who will get the outputs?
  - Who has an oversight role?
  - Who has a related role?
  - Who will be rewarded?
  - Who will be penalized?

4.5.3 Sources of Requirements

1- Stakeholders

- **Involving stakeholders in individual or group requirements sessions to define system details**
  - **Results in a high quality system from the customer/user point of view**
  - **Results in higher end-user satisfaction**
  - **Helps to educate customer/user about system through their participation**



4.5.3 Sources of Requirements

1- Stakeholders

- **Benefits** of stakeholder involvement include
  - Improved system information content
  - Improved system information quality
  - Improved system productivity
  - Improved customer/user understanding of the system
  - Creation of customer/user consensus
  - Creation of customer/user commitment to system success
  - Determination of early scoping decisions
  - Increased confidence that consensus will be reached
  - Improved quality of requirements
  - Development of an integrated team

4.5.3 Sources Of Requirements

2- Business Processes

- Analysis of the existing business processes facilitates identification of business problems and potential improvements
  - Identify and list problems with the current business process
  - Consider problems (missing, not working, needed)
  - Consider opportunities for improvement
  - Consider improvement activities
    - Improvements may involve opportunities for automation (system requirements) and/or changes to the current business process (business process improvements)

4.5.3 Sources of Requirements

3- Organization Policies and Procedures

- **Policies and procedures define work practices and how things are done in the workplace**
- **Review and analysis of policies, procedures, protocols and technical standards aid in determining business rules and constraints**
- **Organizational documentation may also explicitly define requirements for process automation, including workflow, relationships, and interactions**
- **Technical Standards**

4.5.3 Sources of Requirements

3- Organization Policies and Procedures

Business Rule: a statement that defines some aspect of the business process. It is intended to assert structure or to control or influence the behavior of the business processes surrounding the system

Constraint: restrictions in the way a system is developed. Constraints can be economic, political, technical, or environmental and pertain to project resources, schedule, target environment, or to the system itself.

4.5.3 Sources of Requirements

4- Existing Systems

Analysis of existing **automated** systems provides insight into data that might be used by the new system.

Documents to be reviewed:

- **User Manuals**
- **Data Samples**
- **Interface Descriptions**
- **Sample Reports**
- **Sample Screens**

4.5.6 Requirement Elicitation Process PCDC

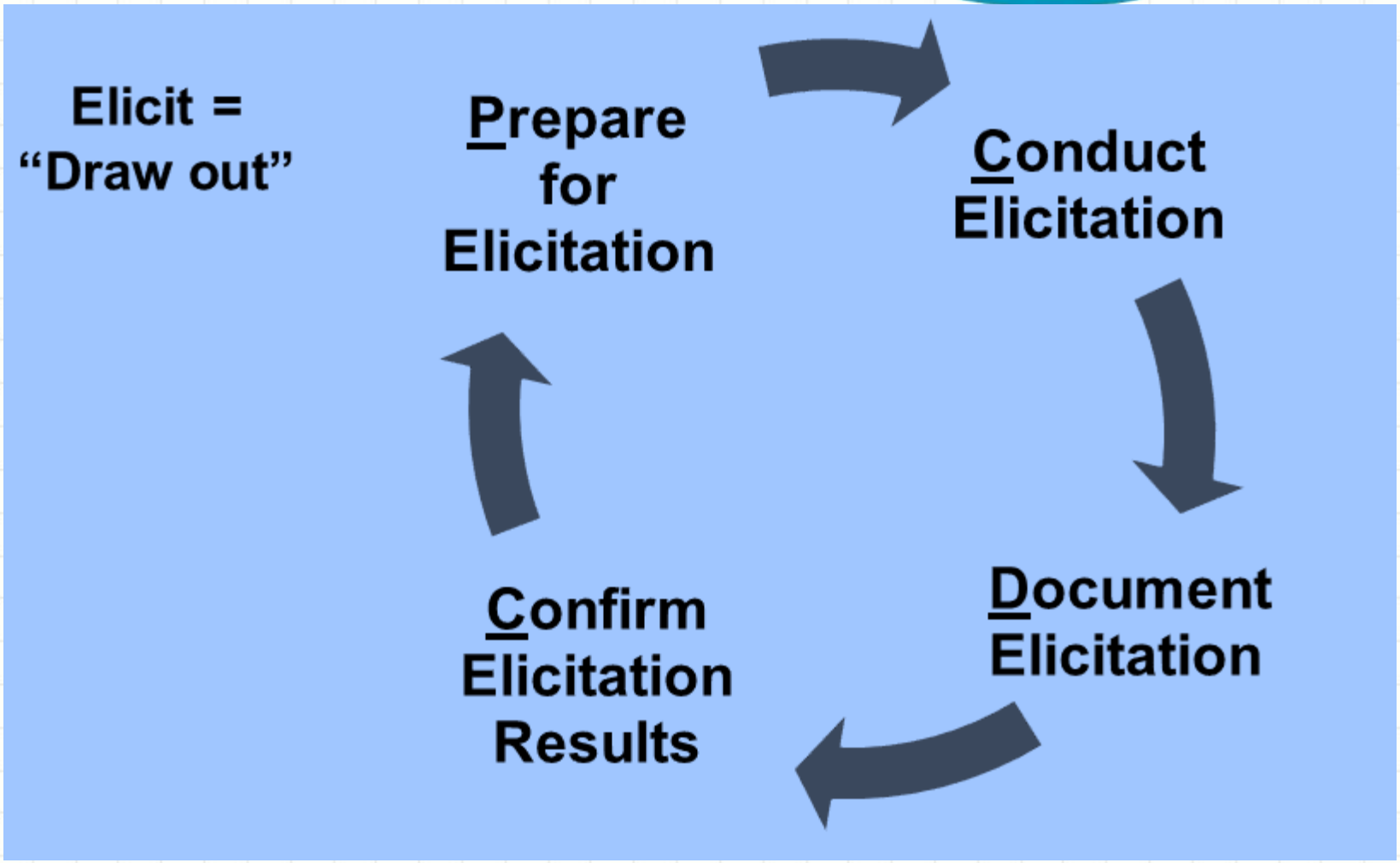
Prepare for Elicitation

Conduct Elicitation Activity

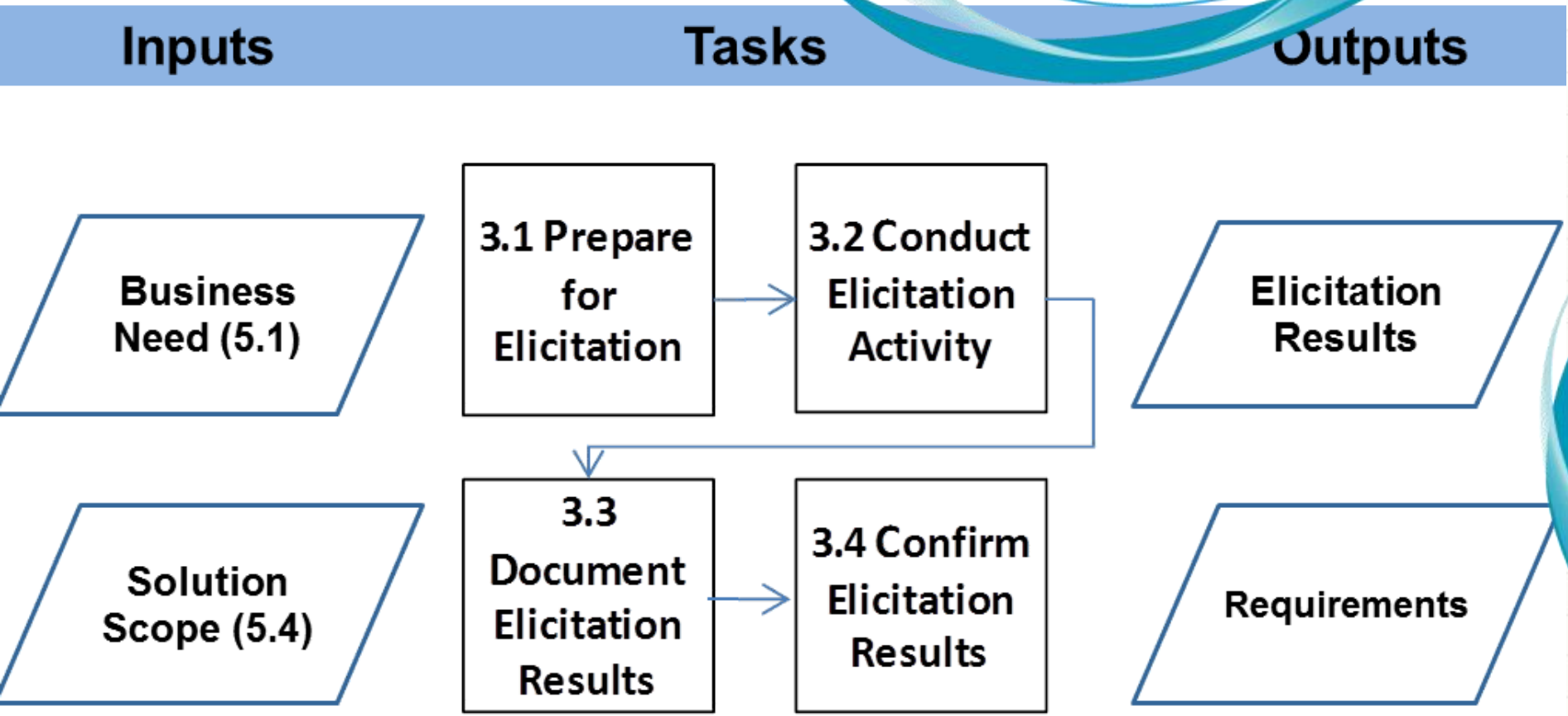
Document Elicitation Results

Confirm Elicitation Results

4.5.6 PCDC


Elicit =
"Draw out"
Prepare for Elicitation
Conduct Elicitation
Document Elicitation
Confirm Elicitation Results

4.5.6 PCDC


Inputs
Tasks
Outputs
Business Need (5.1)
Solution Scope (5.4)
3.1 Prepare for Elicitation
3.2 Conduct Elicitation Activity
3.3 Document Elicitation Results
3.4 Confirm Elicitation Results
Elicitation Results
Requirements

4.6 Requirements Elicitation Techniques

1. Brainstorming
2. Document Analysis
3. Focus Group
4. Interface Analysis
5. Interview
6. Observation
7. Prototyping
8. Requirements Workshop
9. Survey/Questionnaire

4.6.1 Interviews -- Description

An interview is a systematic approach to elicit information from a person or group of people in an informal or formal setting by talking to the person

- the interviewer asking relevant questions and documenting the responses.

In an interview, a business analyst formally or informally directs his/her questions to: a stakeholder / a subject-matter-expert / a potential user to obtain answers that finally take the shape of requirements.

4.6.1 Interviews -- Description

Interviews are of two basic types:

Structured interview, where the business analyst has a pre-defined set of questions and is looking for answers.

Unstructured interview, where, without any pre-defined questions, the business analyst and the interviewee discuss in an open-ended way what the business expects from the target system.

4.6.1 Interviews -- Description

Successful interviewing depends on several factors such as, but not necessarily limited to:

- Level of understanding of the business analyst in that business domain.
- Experience of the business analyst in conducting interviews.
- Skill of the business analyst in documenting the discussions.
- Readiness of interviewee to provide the relevant information.
- Degree of clarity in interviewee's mind about what the business wants/expects from the target system.
- Rapport of the interviewer with the interviewee.

4.6.1 Interviews – Process

1- Prepare for Interview

- Define the interview's focus or goal.
- Identify potential interviewees.
  - Who holds the most authentic and the most current information on the subject of interest?
  - What is his/her stake in the project?
  - What is the relative importance of information held by one person Vs. that held by another person?
- Design the interview. The business analyst may need to custom-design the interview for each identified interviewee.
  - The format for the interview, structured vs. unstructured

4.6.1 Interviews – Process

1- Prepare for Interview

- **Design the interview. The business analyst may need to custom-design the interview for each identified interviewee.**
  - **The format for the interview, structured vs. unstructured.**

4.6.1 Interviews – Process

1- Prepare for Interview

If a structured interview, the type of questions:

- **Closed-ended questions:**
  - **Questions that are used to elicit a single response such as: yes, no, 3 ,..**
  - **Example: How many hours does it take for the claim process to be completed?**
- **Open-ended questions:**
  - **Questions that are used to elicit a dialog or series of steps and cannot be answered in a yes or no fashion but need explaining.**
  - **Example: What does a claim processor do on receipt of a claim form?**

4.6.1 Interviews – Process

1- Prepare for Interview

Organization of the questions:

- **Use a logical order or an order of priority/significance.**
- **Examples of order would be:**
  - **general questions to specific questions**
  - **start to finish**
  - **detail to summary, etc.**
- **The actual organization is based on the interviewee's knowledge, the subject of the interview, etc.**
- **The goal is to follow a logical order rather than jump around when asking questions.**

4.6.1 Interviews – Process

1- Prepare for Interview

- Location of participants.
  - An interview can be conducted in-person or via telephone, or by means of other multi-media tools such as videoconferencing over the Internet or intranet.

- The interview time and site are convenient to the interviewee.

- Determine if a scribe is needed
  - If so, include that person in the scheduling process.
  - Determine if a tape recorder is needed. If so, discuss the purpose and usage with the interviewee.

4.6.1 Interviews – Process

1- Prepare for Interview

- The business analyst contacts the selected interviewees and explains to them why their assistance is needed.
- This initial contact is established in person, by mail or by telephone.
- The purpose is to explain the objective of the interview to the potential interviewee.

4.6.1 Interviews – Process

2- Conduct the Interview

- **Opening the interview**

The business analyst as the interviewer gives an introduction, states the purpose of the interview, addresses any concerns raised by the interviewee, and explains that notes will be taken and shared with the interviewee after the interview.

4.6.1 Interviews – Process

2- Conduct the Interview

- During the interview
  - The interviewer maintains focus on the established goals and pre-defined questions.
  - All concerns raised by the interviewee are addressed during the interview or documented for follow-up after the interview or in a subsequent interview.
  - The interviewer practices active listening to confirm what he/she understood from the information offered at various times during the interview.

4.6.1 Interviews – Process

2- Conduct the Interview

- **Closing the interview**
  - **Business analyst asks the interviewee for areas which may have been overlooked in the session.**
  - **Lastly, the business analyst summarizes the session, reminds the interviewee of the upcoming review process and thanks the interviewee for his/her time.**

4.6.1 Interviews – Example

System A shall send daily feedback to System B

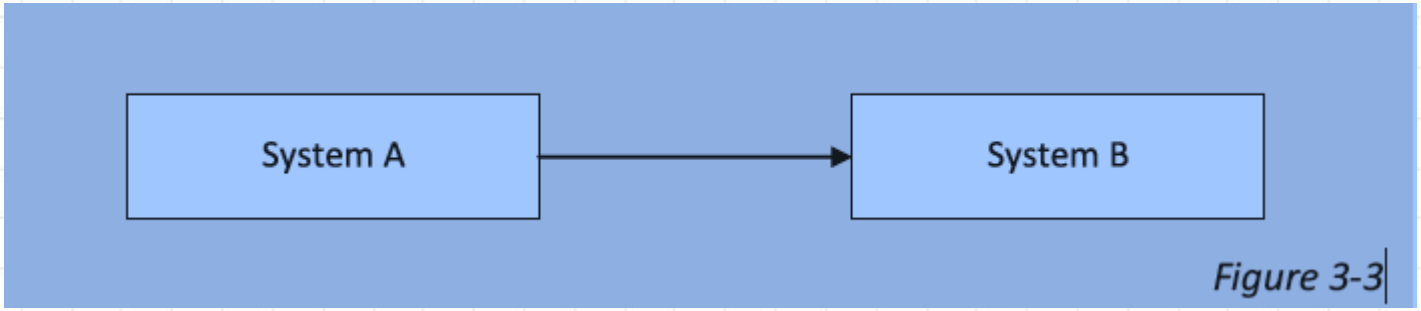


Figure 3-3

What are the questions we can ask here?

4.6.1 Interviews – Example

1. What is the current (As-Is) status? Is this a new functionality?
2. How will this feed be sent? Manually or automatically?
3. What is the trigger for system A to send the feed?
4. Is this requirement In Scope for the project?
5. In what format should the feed be sent?
6. Do you have a template of that feed? Can I have a look at it?
7. If yes, Is this template changing?

4.6.1 Interviews – Example

System A shall be loaded with the necessary data

1. What are the necessary data? and add this to the requirements
2. How do you want the data to be loaded? What format?
3. How many times? Is it a onetime thing?
4. What do you mean by appropriate time? I need something more specific like a date or specific period of time
5. When is the system retiring?

4.6.1 Interviews – General Questions

We have found it extremely effective to close down our requirements elicitation interviews by asking some version of the following four questions:

- Is there anyone else we should speak to?
- Have we missed anything?
- Do you have any questions for us?
- Can we contact you directly if we have any additional questions or require any additional clarification?

4.6.1 Interviews – Process

3- Document & Confirm the Results

- After the interview is complete, the business analyst organizes the information elicited and sends the notes to the interviewee for review.

- Documenting the discussion for review allows the interviewee to see all of the information in context.
  - This review may point out items that are incorrect or missing because the interviewer (or scribe) missed documenting them
  - or because the interviewer (or scribe) documented them incorrectly,
  - or because the interviewee missed discussing them.

4.6.1 Interviews – MOM's

Project Title:	**Date:**
Time:	**Reason:**
Attendees:	
Meeting Objective:	
Meeting Minutes Summary:	
1. *Topic 1* 2. *Topic 2* 3. *Topic 3*	

Actions and Next Steps	*Assigned To*	*Due Date*

4.6.1 Interviews – Goals

During elicitation (early)

- Understanding role of interviewee within organization
- Understanding the work context
- Getting requirements on new system

Goal: Description of Solution Feature

During analysis

- Discussing use cases with client and users
- Correction and refinement (requirements and functionality)

Goal: Getting complete use cases (next lesson

Interview With Dealers Manager

1- How do you register the dealers , dealer can register himself online?
2-What is the data needed for the dealer ?
3- What is the dealer registration approval process
Is there any payment for registration
4- how dealers login to the application
5- can dealers ad their advertisements online?
6- What are the data needed for each advertisement?
7-Do we need approval for the advertisement in order to be published(add , update)
8-Is there online payment for the Advertisement?
9-Payment of ad will be done with submission or approval of the ad
10- What are the maximum number of ads
11 -Do we have different periods, locations & sizes of ads with different prices?
12- Can dealers view the list of all their added advertisement
13- Any notifications needed for dealers before ad expiration
14- Can dealer renew or extend any of his advertisements
15- Can dealer view his paid amounts
16- Can dealer generate any reports(ad clicks ,..)
17- Can back end users view existing dealers list?
18- Can they block any dealer
19- Can dealer delete any active ad
19-Can dealer refund payments
20- What is the data needed for integration with your Financial Application
21-Do you want to categorize dealers and give them special rates as per their ranks.

System Components

- Back End
  - Setup Data Management
  - Manage Ads Pricing
  - Manage Back End Users
  - Manage Dealers' Registration Requests (Approve/Reject)
  - Approve/Reject Vehicles
  - Manage Vehicles
    - Edit Vehicle
    - Activate/De-activate Vehicle
  - Manage Sellers
    - Edit Seller
    - Activate/De-activate Vehicle
  - Manage Dealers
    - Edit Dealer
    - Activate/De-activate Dealer
  - Manage Dealers' Ads
    - Edit Ad
    - De-activate Ad
    - Approve/Reject Ad
  - Notifications
  - Content Management

System Components

- Front End
  - Register as Customer
  - Manage my Profile (Customer)
  - Register As Dealer
  - Manage My Profile (Dealer)
  - Search Vehicles
  - Browse Vehicles
  - View Vehicle Details
  - Add New Vehicle (Seller or Dealer)
  - Manage my vehicles (Seller or Dealer)
  - Add new Advertisement (Dealer)
  - Manage My Ads(Dealer)
  - View Payment History(Dealer)
  - Submit Complain
  - Track my Complain status
  - Compare cars

- Manage Backend Users
  - System administrator will be able to manage backend users
  - System admin will be able to view a list of already existing back end users
  - List will include the following fields':
    - Name
    - Department
    - Role
    - Status
  - Search users using free text search
    - System will search using the exact word only in the following fields: name , department , role
  - Filter users , admin can filter users by any of the following Department , role
  - User can choose any of the active users to de-activate
    - User has to define a de-activation reason (choose from predefined list of reasons)
    - De-activated users will not be able to login to application
    - System will capture the following data :
      - Deactivation date
      - Admin who de-activated
      - Reason
  - Re-activate user
  - Admin can add user
    - User data will includes:
      - Department
      - Role
      - Username
      - Password
  - Edit User , admin will be able to edit in any of the back end user data

- Manage Complaints
  - View Active Complains
    - Complains admin will be able to view a list of currently active complains
    - Complains list will include:
      - Submission Date
      - Seller
      - Title
      - Status
    - List will be automatically sorted by submission date
    - Search complains
    - Filter complians
    - User can choose any of these complaints to view its details
    - Details will include :
      - Case
      - Date
      - User
      - Status
  - View Complains History
    - History will include all the transactions done on the complains
    - Transactions data will include:
      - User
      - Action
      - Date
  - Delete Complain

- View Complains History
- Delete Complain
- Forward Complian
  - Admin can choose any of the active complins to forward to any internal user
  - System will give user possibilty to choose one of already defiend users
  - Admin can defien

4.6.1 Interviews – Strengths

- Encourages participation and establishes rapport with the stakeholder.
- Simple, direct technique that can be used in varying situations.
- Allows the interviewer and participant to have full discussions and explanations of the questions and answers.
- Enables observations of non-verbal behavior.
- The interviewer can ask follow-up and probing questions to confirm own understanding.
- Maintain focus through the use of clear objectives for the interview that are agreed upon by all participants and can be met in the time allotted.

4.6.1 Interviews – Weaknesses

- Interviews are not an ideal means of reaching consensus across a group of stakeholders.
- Requires considerable commitment and involvement of the participants.
- Training is required to conduct good interviews. Unstructured interviews, especially, require special skills. Facilitation/virtual facilitation and active listening are a few of them.
- Depth of follow-on questions may be dependent on the business analyst's knowledge of business domain.
- Transcription and analysis of interview data can be complex and expensive.
- Resulting documentation is subject to interviewer's interpretation.

4.6.2 Survey / Questionnaire -- Purpose

A survey is a means of eliciting information from many people, anonymously, in a relatively short time.

A survey can collect information about customers, products, work practices and attitudes. A survey is often referred to as a questionnaire.

4.6.2 Survey / Questionnaire – Description

A survey administers a set of written questions to the stakeholders and subject matter experts. Their responses are analyzed and distributed to the appropriate parties.
Questions in a survey are of two types:

Closed:

- The respondent is asked to select from available responses.
- Useful when the issues are known but the range of user responses to them is not.
- The responses to closed questions are easier to analyze than those gained from open-ended questions.

Examples:

1-Is it helpful, if Online Vehicle Trading provides update news and reviews about the cars? (Very Helpful , Somehow Helpful, Not Helpful)

2- Is it helpful, if Online Vehicle Trading provides the information about cars spare parts? (Very Helpful , Somehow Helpful, Not Helpful)

4.6.2 Survey / Questionnaire – Description

Open-ended:

Open-ended questions are ones that require more than one word answers. The answers could come in the form of a list, a few sentences or something longer such as a speech, paragraph or essay.

Example:

1- What is your opinion, if Online Vehicle Trading provides you easy and fast searching techniques of cars?

2- What is your opinion, if Online Vehicle Trading provides you different offers to buy and sale of cars with the passage of time?

4.6.2 Survey / Questionnaire – Process

1. Prepare

- *Select the* **distribution** *and* **collection** *methods:*
  - For each sample group determine the appropriate communication mode - surface mail; e-mail; web-based, telephone.
  - *Determine if the survey should be supported with individual interviews:* As a survey does not provide the depth of data that can be obtained from individual interviews consider:
  - Pre-survey interviews may provide ideas for survey questions.

- **Post-survey** interviews can target specific survey responses or themes to elicit a greater level of detail.

- *Write the survey* **questions**

- Communicate the **purpose**: Explain the objectives of the survey. If the stakeholders can see the reason for completing the survey, they are more likely to do so.

4.6.2 Survey / Questionnaire – Process

1. Prepare

- A survey requires **detailed preparation** to ensure the needed information is obtained while minimizing the responders' time to complete it.
- Define the **purpose** of the survey and the target survey group:
  - Identify the objectives
  - and the likely user group to be surveyed.
  - Confirm with the sponsor.
- *Choose the appropriate* **survey type***:* 'open-ended' or 'close-ended' , MIX
- *Select the* **sample group***:* Consider both the survey type and the number of people in the identified user group to determine if the entire group should be surveyed.

  - For example: When the sample group is small, it may be practical to survey all members of the group. When the sample group is large and the desired survey type is 'open-ended', it may be necessary to identify a subset of users.

4.6.2 Survey / Questionnaire – Process

1. Prepare

- Be aware of the group's **characteristics**:
  - Understand the **background** of the target group including their environment and specific terminology.
  - Use this information when writing the questions.
  - If there is significant **diversity** in the group's background it may be useful to divide a large group into smaller and **homogenous** groups during the preparation stage and then produce variations of the survey that fit each group's background.

- Focus on the **requirement**: All questions should be directed towards the stated objectives and the objectives should be supported by a comprehensive set of questions.

- Keep the survey **short**. Less than 10 items is preferable limit in terms of the content.

4.6.2 Survey / Questionnaire – Process

1. Prepare

- Make the survey **easy** and fast to complete, ideally no more than five or 10 minutes.
- Make sure that the question wording is clear and **concise**.
- Avoid **double** questions in a single question.
- Avoid questions involving **negatives**.
- Avoid complex **branching** structures.
- Avoid asking questions that make respondents feel **uncomfortable**.
- Trying to elicit information that is restricted by **regulations** is likely to put respondents on the defensive.
- **Test** *the survey.* Perform a usability test on the survey. Use the results to

4.6.2 Survey / Questionnaire – Process

2. Distribute the survey

3. Communicate survey results

- **Collate** the responses. For the responses to 'open-ended' questions, evaluate the details and identify any emerging themes.
- **Analyze** and summarize the results.
- **Report** findings to the sponsor.

4.6.2 Survey / Questionnaire – Strengths

- When using 'closed-ended' questions, effective in obtaining quantitative data for use in statistical analysis.
- When using open-ended questions, the survey results may yield insights and opinions not easily obtainable through other elicitation techniques.
- Does not typically require significant time from the responders.
- Effective and efficient when stakeholders are not located at one place.
- May result in large number of responses.
- Quick and relatively inexpensive to administer.

4.6.2 Survey / Questionnaire – Weaknesse

- Use of open-ended questions requires more analysis by the business analyst.
- To achieve unbiased-results, specialized skills in statistical sampling methods are needed when the decision has been made to survey a sample subset.
- Some questions may be left unanswered or answered incorrectly due to their ambiguous nature.
- May require follow up questions or more survey iterations depending on the answers provided.
- Not well suited for collecting information on actual behaviors.

4.6.3 Brainstorming

Brainstorming is an excellent way of eliciting many creative ideas for an area of interest.

Structured brainstorming produces numerous creative ideas about any given "central question" or topic..

4.6.3 Brainstorming -- Description

Brainstorming is a technique that promotes diversion type of thinking. Brainstorms help answer specific questions such as (but not limited to):

- **What options are available to resolve the issue at hand?**
- **What factors are constraining the group from moving ahead with an approach or option?**
- **What could be causing a delay in activity 'A'?**
- **What can the group do to solve problem 'B'?**

4.6.3 Brainstorming -- Description

- Brainstorming works by focusing on a topic or problem, and then coming up with many radical solutions to it.
- This technique is best applied in a group as it draws on the experience and creativity of all members of the group.
- In the absence of a group, one could brainstorm on one's own to spark new ideas.

4.6.3 Brainstorming Process -- Prepare

- Develop a clear and concise definition of the area of interest.
- Determine a time limit for the group to generate ideas, the larger the group, the more time required.
- Decide who will be included in the session and their role - participant or facilitator. Aim for participants (ideally 6 to 8) who represent a range of background and experience with the topic.
- Establish criteria for evaluating and rating the ideas.

4.6.3 Brainstorming Process – Conduct

- Share new ideas without any discussion, criticism or evaluation.
- Visibly record all ideas.
- Encourage participants to be creative, share exaggerated ideas, and build on the ideas of others.
- Don't limit the number of ideas as the goal is to elicit as many ideas as possible within the time period.

4.6.3 Brainstorming Process – Wrap Up

- Once the time limit is reached, using the pre-determined evaluation criteria, discuss and evaluate the ideas.
- Create a condensed list of ideas, combine ideas where appropriate, and eliminate duplicates.
- Rate the ideas. There are many techniques that can be used to prioritize the ideas, e.g. multi-voting.
- Distribute the final list of ideas to appropriate parties.

4.6.3 Brainstorming Strengths & Weaknesses

Strengths

- Able to elicit many ideas in a short time period.
- Non-judgmental environment enables outside-the-box thinking

Weaknesses

- Dependent on participants' creativity.

4.6.4 Document Analysis

Purpose

- Document analysis is a means to elicit requirements of an existing system by studying available documentation and identifying relevant information.
- Document analysis is used if the objective is to gather details of the "As Is" environment such as existing business rules, entities, and attributes that need to be included in a new system or need to be updated for the current system.
- This technique would also apply in situations where the subject matter experts for the existing systems are no longer with the organization, or are not going to be available throughout the duration of the requirements elicitation process.

4.6.4 Document Analysis

Description

- Requirements elicitation typically includes analysis of documents such as:
  - business plans, market studies, contracts,
  - requests for proposals, statements of work, memos,
  - existing guidelines, procedures, training guides,
  - competing products literature, published comparative product reviews, problem reports, customer suggestion logs,
  - and existing system specifications to list a few.

- Identifying and consulting all likely sources of requirements will result in improved requirements coverage assuming the documentation is up to date.

4.6.4 Document Analysis Process

1- Prepare for Document Analysis:
Evaluate which existing system and business documentation are relevant and appropriate to be studied.

2. Analyze the documents:
Study the material and identify relevant business details.
Document business details as well as questions for follow-up with subject matter experts.

3. Post Document Analysis wrap-up:
Review and confirm the selected details with subject matter experts.
Obtain answers to follow-up questions.

4.6.4 Document Analysis Strengths & Weaknesses

Strengths

- Not starting from a blank page.
- Leveraging existing materials to discover and/or confirm requirements.
- A means to cross-check requirements from other elicitation techniques such as interviews, job shadowing, surveys or focus groups.

Weaknesses

- Limited to "as-is" perspective.
- Existing documentation may not be up-to-date or valid.
- Can be a time-consuming and even tedious process to locate the relevant information.

4.6.5 Focus Group

Description

A focus group is composed of pre-qualified individuals whose purpose is to discuss and comment on a topic.

This is an opportunity for individuals to share their own perspectives and discuss them in a group setting.

This could lead participants to reevaluate their own perspectives in the light of others' experiences.

A trained moderator manages the administrative pre-work, facilitates the session and produces the report.

4.6.5 Focus Group

Purpose

- A focus group is a means to elicit ideas and attitudes about a specific product, service or opportunity in an interactive group environment.
- The participants share their impressions, preferences and needs, guided

4.6.5 Focus Group Process
1. Prepare for the Focus Group

Recruit Participants

- A focus group typically has 6-12 attendees , if many people need to participate, it may be necessary to run more than one focus group.

- The topic of the focus group will influence who should be recruited. If the topic is a new product, it is likely that existing users (experts and novices) should be included.

- There are pros and cons that should be considered when using homogeneous vs. heterogeneous composition.
  - **Homogeneous** - individuals with similar characteristics. Caution: Differing perspectives will not be shared. Possible solution: conduct separate sessions for different homogeneous groups.
  - **Heterogeneous** - individuals with diverse backgrounds, perspectives. Caution: Individuals may self censor if not comfortable with others' background resulting in lower quality of data collected.

4.6.5 Focus Group Process
1. Prepare for the Focus Group

Assign the moderator and recorder

- The moderator should be experienced in facilitating groups.
- Typical skills include: promote discussion; ask open questions; facilitate interactions between group members; engage all members; keep session focused; remain neutral; be adaptable and flexible.

Create discussion guide

The guide includes goals/objectives of the session and five to six open questions.

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4.6.5 Focus Group Process

2- Run the focus group session

- The moderator guides the group's discussion, follows a preplanned script of specific issues and ensures the objectives are met.
-
- However, the group discussion should appear free-flowing and relatively unstructured for the participants.

- A session is typically 1 to 2 hours in length. A recorder captures the group's comments.

4.6.5 Focus Group -- Process

3- Produce Report

The moderator objectively analyzes and documents the participants' agreements and disagreements and synthesizes them into themes.

4.6.5 Focus Group – Strengths

- Ability to elicit data from a group of people in a single session saves time and costs as compared to conducting individual interviews with the same number of people.
- Effective for learning people's attitudes, experiences and desires.
- Active discussion and the ability to ask others questions creates an environment where participants can consider their personal view in relation to other perspectives.

4.6.5 Focus Group - Weaknesses

- In the group setting, participants may be concerned about issues of trust, or may be unwilling to discuss sensitive or personal topics.
- Data collected (what people say) may not be consistent with how people actually behave.
- If the group is too homogenous the group's responses may not represent the complete set of requirements.
- A skilled moderator is needed to manage the group interactions and discussions.

Brainstorming Vs. Focus Group

- Brainstorming technique is used to produce ideas and increase creativity.
- For example, after you've defined your problem and are looking for the different solution options, you gather a few folks from your project team (mostly the development team) and ask them about what they think a solution could be.
- The result of these gatherings could be ideas/solution that are obvious, or the so-not-obvious-out-of-the-norm options.
- Brainstorming is a way to ensure that your organization remains innovative.

4.6.6 Interface Analysis

Purpose

Interface analysis is initiated by project managers and analysts to reach agreement with the stakeholders on what interfaces are needed.

Subsequent analysis uncovers the detailed requirements for each interface.

4.6.4 Interface Analysis

Description

- Interfaces types include:
  - Interfaces to and from external systems
  - Interfaces to and from external hardware devices
- The users, external systems and systems that own the devices are considered stakeholders.
- Interface analysis helps to clarify the boundaries of the system.
- It distinguishes which system provides specific functionality along with the input and output data needs.

4.6.6 Interface Analysis - Process

1. **Prepare for Interface Analysis:**

- Identify the necessary interfaces.
- An effective means to visualize the interfaces is to draw a Context Diagram.

4.6.6 Interface Analysis - Process

2. Conduct Interface Analysis:
For each interface:

- Determine its type: user interface, system-to-system interface, external hardware device interface

- Elicit specific details about the interface, depending on its type.
  - For an interface where the user directly engages the system.
  - For an interface where a stakeholder receives a report.
  - For a system-to-system interface or an interface with an external hardware

4.6.6 Interface Analysis – Strengths

The elicitation of the interfaces‘ provides valuable details for project management:

- **Impact on delivery date. Knowing what interfaces are needed, their complexity and testing needs enables more accurate project planning and potential savings in time and cost.**

- **Collaboration with other systems or projects. If the interface to an existing system, product or device and the interface already exists, it may not be easily changed. If the interface is new, then the ownership, development and testing of the interface needs to be addressed and coordinated in both projects' plan.**

- **In either case, eliciting the interface requirements will require negotiation and cooperation between the owning systems.**

4.6.6 Interface Analysis – Weaknesses

Does not provide an understanding of the business process since this technique only exposes the inputs, outputs and key data elements related to the interfaces.

4.6.7 Observation

Purpose

Observation is a means to elicit requirements by conducting an assessment of the subject matter expert's work environment.

This technique is appropriate when documenting details about the current processes or if the project intends to enhance or change a current process.

4.6.7 Observation

Description

Observation relies on studying people performing their jobs, and is sometimes called "job shadowing"

The business analyst may need to watch them perform their work in order to understand the flow of work.

There are two basic approaches for the observation technique:

Passive / invisible.

- Business analyst observes the subject matter expert working through the business routine but does not ask questions.
- The business analyst writes notes about what he/she sees, but otherwise stays out of the way, as if he/she was invisible. The business analyst waits until the entire process has been completed before asking any questions.
- The business analyst should observe the business process multiple times to ensure he/she understands how the process works today and why it works the way it does.

4.6.7 Observation

Description

Active / visible. In this approach, while the business analyst observes the current process and takes notes he/she may dialog with the worker.

When the business analyst has questions as to why something is being done as it is, he/she asks the questions right away, even if it breaks the routine of the person being observed.

In this approach, the business analyst might even participate in the work to gain an immediate appreciation for how the current process works.

4.6.7 Observation

Description

Variations of the observation technique:

- In some cases, the business analyst might participate in the actual work to get a hands-on feel for how the business process works today.
- The business analyst becomes a temporary apprentice.
- The business analyst watches a demonstration of how a specific process and/or task are performed.

4.6.7 Observation – Process

1. Prepare for observation

Determine what sampling of users to observe and which activities.

Prepare questions to ask during or after the shadowing.

2. Observe

- Observer introduces himself to the person being observed and:
  - Reassures the user that their work is not being questioned but rather the observation of the work and resulting documentation will serve as input to requirements analysis.
  - Explains to the user that they may stop the observation process at any time if they feel it is interfering with their work.
  - Suggests to the user that they may "think aloud" while they are working as a way to share their intentions, challenges, and concerns.

3. Conduct observation.

- Take detailed notes.
- If using the active observation approach, ask probing questions about why certain processes and tasks are being done.

4.6.7 Observation – Process

4. Post Observation wrap-up

- Obtain answers to original questions, or new questions that surfaced during the observations.
- Feedback a summary of notes to the shadowed worker, as soon as possible, for review and any clarification.
- When observing many users, compile notes at regular intervals to identify commonalties and differences between users.
- Review findings with the entire shadowed group to ensure that the final details represent the entire group, not selected individuals.

4.6.7 Observation – Strengths

- **Provides a realistic and practical insight into the business knowledge by getting a hands-on feel for how the business process works today.**

- **Elicits details of informal communication and ways people actually work around the system that may not be documented anywhere.**

4.6.7 Observation – Weaknesses

- Only possible for existing processes.
- Could be time-consuming.
- May be disruptive to the person being shadowed.
- Unusual exceptions and critical situations that happen infrequently may not occur during the observation.

4.6.8 Prototyping -- Description

- Initial prototyping produces "mock ups" of the screens or report layouts for an application.
- Business users often find prototyping to be a comfortable, concrete means to identify, describe and verify their interface needs.

The functional scope of the prototype:

- **Horizontal prototype**: Models a shallow, and possibly wide, view of the system's functionality. Typically does not have any business logic running behind the visualization.
- **Vertical prototype**: Models a deep, and usually narrow, slice of the entire system's functionality.

4.6.8 Prototyping – Description

The use of the prototype throughout the system development lifecycle:

'Throw-away' Prototype:

- This exploratory approach seeks to quickly uncover and clarify interface requirements using simple tools, sometimes just paper and pencil.
- 'Throw-away', such a prototype is usually discarded when the final system has been developed.
- The focus is on functionality that is not easily elicited by other techniques, has conflicting viewpoints, or is difficult to understand.

Evolutionary Prototype:

- This rigorous approach extends the initial interface requirements into a fully functioning system and requires a specialized prototyping tool or language.
- This prototype produces "running" software.

4.6.8 Prototyping -- Process

1. Prepare for prototyping

- Determine the prototyping approach: throw-away vs. evolutionary; vertical vs. horizontal.

- Identify the functionality to be modeled.

2. Prototype

Build the prototype.

3. Evaluate the prototype

Verify the prototype represents the user's needs.

4.6.8 Prototyping – Strengths

- Supports users who are more comfortable and effective at articulating their needs by using pictures, as prototyping lets them "see" the future system's interface.
- A prototype allows for early user interaction and feedback.
- A throw-away prototype is an inexpensive means to quickly uncover and confirm user interface requirements.
- A vertical prototype can demonstration what is feasible with existing technology, and where there may be technical gaps.
- An evolutionary prototype provides a vehicle for designers and developers to learn about the users' interface needs and to evolve system requirements.

4.6.8 Prototyping – Strengths

- Helps the developers and reduce the development time.
- Reduce the development costs.
- Invite the users to contribute.
- System analysts and developers receive the productive feedback.
- Prototypes may demonstrate progress at an early stage of development.
- Prototypes clear the many things in front of the users.
- Provide the high contentment of the users.

4.6.8 Prototyping – Weaknesses

- Depending on the complexity of the target system, using prototyping to elicit requirements can take considerable time if the process gets bogged down by the "how's" rather than "what's".
- Assumptions about the underlying technology may need to be made in order to present a starting prototype.
- A prototype may lead users to set unrealistic expectations of the delivered system's performance, reliability and usability characteristics.

4.6.9 Requirement Workshops– Purpose

- A Requirements Workshop is a structured way to capture requirements.
- A workshop may be used to scope, discover, define, prioritize and reach closure on requirements for the target system.
- Well-run workshops are considered one of the most effective ways to deliver high quality requirements quickly.
- They promote trust, mutual understanding, and strong communications among the project stakeholders and project team and produce deliverables that structure and guide future analysis.

4.6.9 Requirement Workshop Description

A requirements workshop is not a traditional meeting. Instead, it is a highly productive focused event attended by carefully selected key stakeholders and subject matter experts for a short, intensive period (typically one or few days).

The workshop is facilitated by a team member or ideally, by an experienced, neutral facilitator.

A Scribe documents the business requirements elicited as well as any outstanding issues.

A business analyst may be the Facilitator or the Scribe in these workshops.

A workshop may be used to generate ideas for new features or products, to reach consensus on a topic, or to review requirements.

4.6.9 Requirement Workshop - Process

1- Prepare for the Requirements Workshop

- Clarify the stakeholder's needs, and the purpose of the workshop.
- Identify critical stakeholders who should participate in the workshop.
- Define the workshop's agenda.
- Determine what means will be used to document the output of the workshop.
- Schedule the session(s).
- Arrange room logistics and equipment.
- Send materials in advance to prepare the attendees and increase productivity at the meeting.

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- Send materials in advance to prepare the attendees and increase productivity at the meeting.
- Conduct pre-workshop interviews with attendees.

4.6.9 Requirement Workshop Process

2- Conduct/Run the Requirements Workshop

- Elicit, analyze and document requirements.
- Obtain consensus on conflicting views.
- Maintain focus by frequently validating the session's activities with the workshop's stated objectives.

4.6.9 Requirement Workshop - Process

The Facilitator has the responsibility to:

- Establish a professional and objective tone for the meeting.
- Enforce discipline, structure and ground rules for the meeting.
- Introduce the goals and agenda for the meeting.
- Manage the meeting and keep the team on track.
- Facilitate a process of decision making and build consensus, but avoid participating in the content of the discussion.
- Ensure that all stakeholders participate and have their input heard.
- Ask the right questions; analyze the information being provided at the session by the stakeholders, and follow-up with probing questions, if necessary.

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The Scribe's role is to document the business requirements in the format determined prior to the workshop.

4.6.9 Requirement Workshops– Process

3. Post Requirements Workshop wrap-up done by Facilitator

- Follow up on any open action items that were recorded at the workshop.
- Complete the documentation and distribute it to the workshop attendees and the sponsor.

4.6.9 Requirement Workshop - Strengths

- A workshop can be a means to elicit detailed requirements in a relatively short period of time.
- A workshop provides a means for stakeholders to collaborate, make decisions and gain a mutual understanding of the requirements.
- Workshop costs are often lower than the cost of performing multiple interviews.
- A requirements workshop enables the participants to work together to reach consensus which is typically a cheaper and faster approach than doing serial interviews as interviews may yield conflicting requirements and the effort needed to resolve those conflicts across all interviewees can be very costly.
- Feedback is immediate, e.g. facilitator's interpretation of requirements is fed back immediately to the stakeholders and confirmed.

4.6.9 Requirement Workshop Weaknesses

- Due to stakeholders availability it may be difficult to schedule the workshop.
- The success of the workshop is highly dependent on the expertise of the facilitator and knowledge of the participants.
- Requirements workshops that involve too many participants can slow down the workshop process thus negatively impacting the schedule.
- Conversely, collecting input from too few participants can lead to overlooking requirements that are important to users, or to specifying requirements that don't represent the needs of majority of the users.

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4.7 Elicitation Guidelines

- Define one or more requirements elicitation methods (e.g., interviews, focus groups, team meetings)
- Solicit participation from many people so that requirements are defined from different points of view; be sure to identify the rationale for each requirement that is recorded.
- Identify ambiguous requirements as candidates for prototyping.
- Create usage scenarios or use cases to help customers/users better identify key requirements

4.7 Elicitation Problems

- Not having good skills to collect information and cannot understand the group problem.
- Not well defined the actual Problem.
- Not focus on the requirement of the system but more on the design which is useless on this stage.
- The requirement should be changeable according to time
- Lack of analyst knowledge with the problem.
- Lack of user's knowledge also creates problems for elicitation.

4.7 Elicitation Problems

- Problem with understanding the language between user and analyst.
- Ignoring or omitting the actual problem.
- The boundary of the problem should be well defined

4.7 Elicitation Guidelines

- Assess the business and technical feasibility for the proposed system
- Identify the people who will help specify requirements and understand their organizational bias
- Define the technical environment (e.g., computing architecture, operating system telecommunications needs) into which the system or product will be placed
- Identify "domain constraints" (i.e., characteristics of the business environment specific to the application domain) that limit the functionality or performance of the system or product to be built

5. Business Requirements Document (BRD)

5. Business Requirements Document

Objectives of BRD

- To gain agreement with stakeholders
- To provide a foundation to communicate to a technology service provider what the solution needs to do to satisfy the customer's and business' needs
- To provide input into the next phase for this project
- To describe what not how the customer/business needs will be met by the solution

5. Business Requirements Document

Sample Document

5. Business Requirements Document Exerc

Develop Business Requirements for the Online Electronics Shopping

- **Back End**
  - Manage Products Categories
    - The product categories tree will be 2 levels tree
    - User will be able to Add, update & delete categories and sub-categories
    - In order to add category , the user has to define the following fields:
      - Category name
      - Parent (Optional)
    - Whenever a category is deleted it will be deleted with all its existing sub-categories
    - User cannot delete a category if any of its sub-categories ahs at least one product attached with it.
  - Manage Products
  - Manage Orders
  - Manage Customers

- **Front End**
  - Search Products
  - Browse Products
  - Manage Shopping Cart

5. Business Requirements Document Exerc

Guidelines for writing text requirements include:

- Express one requirement at a time.
- Write in the active voice.
- Use consistent terminology.
- Use a verb or verb phrase.
- Avoid complex conditional clauses.
- Do not assume reader has domain knowledge.
- Use terminology familiar to your stakeholders.